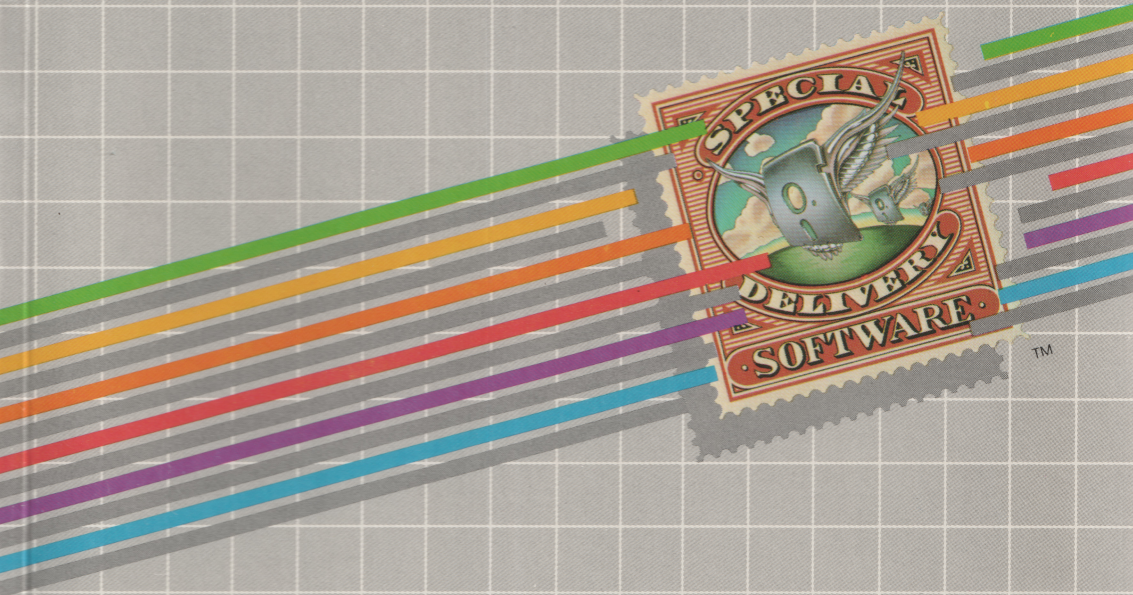


A P P L E









# MUSICOMP

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## FOREWORD

Musicomp is a program that uses the Apple's sound generating capability to play music and displays the musical notes on the screen as they are played. If you know nothing about music, you can still use Musicomp as an excellent demonstration of your Apple's musical capabilities, speed, and high resolution graphics by playing any of the twenty-four selections included as part of the program.

If you know how to read music, you can program in your own compositions or pieces you like from sheet music, save them, and enjoy them later along with, and in the same manner as, pre-programmed selections.



## CHAPTER 1. INTRODUCTION

The purpose of this manual is to teach you how to use the Musicomp program. Chapter 1 discusses some of the nitty-gritty about the program and the manual itself; Chapter 2 describes what the program is, what it does, and what its musical parameters are; Chapter 3 tells you actually how to use the program, including an example; Appendix A contains other references to the Apple system, and Appendix B describes copy protection and how to back up your data files.

To run Musicomp, you will need an Apple II, one disk drive, and a minimum of 24K of memory. To appreciate the full range of tones that Musicomp will generate, it is recommended that you use a small amplifier and external speaker; however, the program will work with the Apple's internal speaker.

This manual assumes that your Apple II system is correctly set up. If you're not sure that the system is ready to go, see Appendix A.

## CHAPTER 2. PROGRAM EXPLANATION

Musicomp is a music synthesizing program that allows you to generate music with six combinations of voice and timbre over a four-octave range without the use of special printed circuit boards or external equipment. Depending on the number of mode changes used, up to 8,000 notes may be programmed with 24K of memory.

This section of the manual explains what the program is and what it does. Actual operating instructions are in Chapter 3, Making Music. If at this point, you do not want to read through the program explanation, you can skip to Chapter 3 and key in the example music there, then come back here later to find out why you did what you did.

### TWO MAJOR SUBDIVISIONS

Musicomp is organized as two more or less separate programs (though they do have overlapping parts).

The first of these is referred to as the main program. From it, you may select for playing one of the twenty-four pieces the program author has included as demonstrations, move to the play/create program, or quit the program entirely.

If you opt to listen to one of the included pieces, a staff will appear on the screen and the notes, shown in proper pitch and time value, will march across the staff from left to right as they are sounded.

The play/create program is the one that allows you to key in your own music, edit it, store it on disk, recall it, and play it.

### RANGE

In keying in your own music, you have available a four-octave chromatic range from the D just below the bass clef to the D above the treble clef. The Apple keyboard is used as a kind of piano keyboard, with Z representing the lowest tone, then S, X, and so on, up to the apostrophe, and left and right parentheses.

This scale is shown in Figure 2-1, the Musicomp Chromatic Scale. The markings above or below the notes represent the keyboard character used to enter new music, and, in parentheses,



the numeric value of the note used in the editing function. Middle C, for example, is shown as W(22). While the time value of the notes may be set as described below, all notes are displayed with their tails descending.

## KEY SIGNATURE

Although the full chromatic scale is available, no key signature may be set to have accidentals taken care of "automatically." All accidentals must be keyed in as they would be played on an instrument, and all accidentals are displayed, as a matter of simplicity, as sharps.

Musicomp is easiest to use in the key of C. Sharped key signatures will at least retain their proper half-tone relationships; flatted key signatures have the potential to become confusing.

## TIME SIGNATURE

Individual notes or rests may be entered as whole, half, quarter, eighth, or sixteenth, and the half through sixteenth values may be dotted. There is no time signature as such, no separation of measures, and no ties.

Musicomp is easiest to use with regular rhythms in common time signatures such as 3/4, 4/4, or 6/8. To achieve eighth-note triplets in 4/4 time, for example, the whole piece may have to be keyed in in a kind of zany 6/8.

## VOICE AND TIMBRE

There are three voice and four timbre options available.

The hard attack, soft decay voice option (H>S) produces a bell-like quality that may be used to mimic percussion or plucked instruments such as piano or harpsichord.

The soft attack, soft decay voice option (S>S) produces a smoothly articulated, symmetric tone suggestive of woodwinds.

Because, by definition, the timbre of the H>S and S>S options is constantly changing as the note is sounded, timbre for these two voices may not be set.

The hard attack, hard decay voice option (H>H) produces the square, instant-on - instant-off tones characteristic of music synthesizers. Here you can choose one of four timbres. In

general terms, timbre #0 is the most open and full-throated; timbre #3 is the most quiet, attenuated, and reedy.

About the only way truly to get a feeling for the voices and timbres is to experiment with them. There is no volume control.



Figure 2-1  
The Musicomp Chromatic Scale



## CHAPTER 3: MAKING MUSIC

If you've skipped straight to this section of the manual from the introduction, or just stumbled onto it because you were too impatient even to read the introduction, then you will want to read these next few paragraphs.

You do not have to know anything about music to play the already programmed in pieces. Instructions for doing this are given in the following section, "Listening to What's There."

If you are going to program in your own music, there have to be a few assumptions. This manual assumes that if you know lots about music but not too much about computers, you'll find someone to help get Musicomp running for you (or refer to Appendix A and B). This manual also assumes that no matter how much you know about computers, you also know the rudiments of standard musical notation and terminology. If you don't, then once you get past the example, you'll have to find a friend to help you with the music. But look to the bright side - that may be a good way to make a new friend. If you want to begin learning something about music, almost any beginning piano instruction book will get you started.

Some of the responses to Musicomp's questions require you to press the RETURN key and others don't. In some cases, the instructions on the screen will tell you exactly what to do and in other cases they won't. In general, whenever you see a flashing cursor (rectangle of light) after a question, you will have to press RETURN after you type your response. In the example, which contains a quick mixture of yes-RETURN and no-RETURN responses, the [R] means press the RETURN key.

## LISTENING TO WHAT'S THERE

After Musicomp has announced its introduction to you and has asked you to wait a moment, the next screen display should look like this:

\*\*\*\*\* APPLE II "MUSICOMP" SYSTEM \*\*\*\*\*

HERE ARE THE MUSICAL SELECTIONS:

PLAY>MUSETTE	FUGUE 1
ROMANCE	FUGUE 2
SWAN	FUGUE 3
GAVOTTE 1	FUGUE 4
GAVOTTE 2	JESU
GAVOTTE 3	SLEEPERS
GAVOTTE 4	JEFGIG
BOURREE 1	ADD NEW MUSIC
BOURREE 2	QUIT PROGRAM
PRELUDE 1	
PRELUDE 2	
MINUET 1	
MINUET 2	
MINUET 3	
MINUET 4	
MINUET 5	
MINUET 6	

>>PRESS FORWARD OR BACK ARROW TO SELECT  
>>PRESS RETURN KEY TO PLAY...



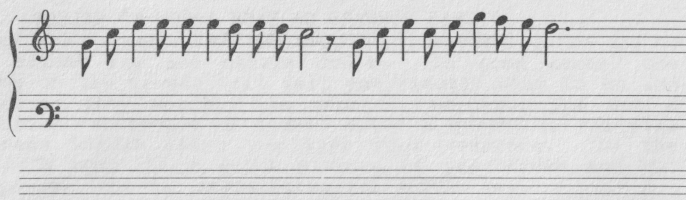
The program author has included twenty-four short musical pieces as demonstrations of what Musicomp can do. To select one, use the forward arrow (>) key to move the cursor (in this case the cursor is PLAY>) down or the back arrow (<) key to move the cursor up. When the cursor is pointing at the piece you'd like to hear, press the RETURN key.

Most of these pieces are baroque compositions typically played on flute, violin, or C-soprano recorder. Their titles are admittedly quite vague - even though that's the way they're often found in music books - and they might be unfamiliar to you. If this is the case, you might want to try "Jesu," which is the flute part for "Jesu, Joy of Man's Desiring," from Johann Sebastian Bach's Cantata No. 147, and which was included on a popular Moog album several years ago.

This example is offered so that, without having to know the reasons for every keystroke, you can program in a few notes of a familiar song and get a feel for how Musicomp works. The explanations of the keystrokes are included for later reference as you experiment further, but you need not pay attention to them now.

This is the musical notation for the example, as it will appear on your screen.

FIGURE 3-1  
EXAMPLE MUSIC



Now, starting from the main program menu (the list of songs), select ADD NEW MUSIC [R].

After you've selected the ADD NEW MUSIC option, you should get a new screen display that looks like this:

\*\*\* APPLE II "MUSICOMP" SYSTEM \*\*\*

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PLAY:

- (1) LOAD MUSIC FROM DISK
- (2) PLAY MUSIC
- (3) RETURN TO MAIN PROGRAM

CREATE:

- (4) ENTER NEW MUSIC
- (5) EDIT MUSIC
- (6) SAVE MUSIC TO DISK

CHOOSE (1-6)?

From this PLAY/CREATE menu  
enter 4 [R].

The program will respond

(N) NEW MUSIC OR (C) CONTINUE?

Enter N [R].

The program will then ask

DO YOU WANT TO HAVE TO TYPE AN 'A' TO  
ENTER EACH NOTE INTO MEMORY?

Enter Y [R].

At this point, the screen display should become a musical staff, with a series of entry commands above it, the keyboard representation below it, and, near the bottom of the screen, the



question:

NOTE # 0? (MUST BE A MODE SET)

Now follow this series of keyboard entries:

```
+          (mode set)
2 [R]      (set soft-soft mode)
4 [R]      (set eighth notes)
6          (note G #29)
A          (add to memory)
I          (note C #34)
A          (add to memory)
+          (mode set to change note time value)
[R]        (reaffirm soft-soft mode)
3 [R]      (set quarter note)
P          (note E #38)
A          (add to memory)
+          (mode set to return to eighth notes)
[R]        (reaffirm soft-soft mode)
4 [R]      (set eighth notes)
P          (note E #38)
A          (add to memory)
P          (note E #38)
A          (add to memory)
+          (mode set for quarter note)
[R]        (reaffirm soft-soft mode)
3 [R]      (set quarter note)
P          (note E #38)
A          (add to memory)
+          (mode set to return to eighth notes)
[R]        (reaffirm soft-soft mode)
4 [R]      (set eighth notes)
Ø          (note D #36)
A          (add to memory)
P          (note E #38)
A          (add to memory)
Ø          (note D #36)
A          (add to memory)
+          (mode set for half note)
[R]        (reaffirm soft-soft mode)
2 [R]      (set half note)
I          (note C #34)
+          (mode set for eighth rest)
[R]        (reaffirm soft-soft mode)
4 [R]      (set eighth note)
*          (rest)
6          (note G #29)
A          (add to memory)
I          (note C #34)
A          (add to memory)
+          (mode set for quarter note)
[R]        (reaffirm soft-soft mode)
3 [R]      (set quarter note)
```

```

P      (note E #38)
A      (add to memory)
+      (mode set for eighth note)
[R]    (reaffirm soft-soft mode)
4 [R]  (set eighth note)
I      (note C #34)
A      (add to memory)
P      (note E #38)
A      (add to memory)
+      (mode set for quarter note)
[R]    (reaffirm soft-soft mode)
3 [R]  (set quarter note)
"      (note G #41)
A      (add to memory)
+      (mode set to return to eighth notes)
[R]    (reaffirm soft-soft mode)
4 [R]  (set eighth note)
:      (note F #39)
A      (add to memory)
P      (note E #38)
A      (add to memory)
+      (mode set for dotted half note)
[R]    (reaffirm soft-soft mode)
.2     (set dotted half note)
Ø      (note D #36)
A      (add to memory)

```

This completes the keyboard entries for the example tune. To review the melody in its entirety, enter ^.

The program will then ask:

REVIEW HOW MANY NOTES?

Enter 32.

If the tune sounds like there's something wrong with it, just let it sit a minute, because what follows is an explanation of the music entry and edit commands. If it sounds ok, let it sit a minute anyway while you read through the explanation of the entry and edit commands, because what follows them is an explanation of how to save your music to disk and retrieve it.

## MUSIC ENTRY COMMANDS

If you've skipped over the example in anticipation of entering your own music right off the bat, then this is the place for you to resume reading the instructions. You also should have read Chapter 2, Program Explanation, so that you'll know why you're doing what you're doing. Matter of fact, it really would be a good idea for you to go back and do the example - it won't take long, and it will give you a basis of comparison with the instructions to follow. If you are truly resistant to learning by example (did any kid ever believe his mother when she said that spinach tasted good?), you should at least compare your music to the Musicomp Chromatic Scale shown in Figure 2-1 and mark in the Musicomp keyboard representations of the notes. This will save you a lot of shuffling back and forth between papers and the resulting potential for getting lost.

To get to the part of the program where you can key in your own music, set the cursor (PLAY>) on the main program menu next to ADD NEW MUSIC (whereupon the cursor will instantly change to WORK>) and press RETURN.

You will then be at the PLAY/CREATE menu (as shown in the example), where you can choose item 4, ENTER NEW MUSIC, and press RETURN.

You then have the option (N) NEW MUSIC OR (C) CONTINUE? If you are entering a new piece from scratch, then you will want to enter N. The CONTINUE option is provided so that, if you've gone back to play what you've already done or if you've called back from disk a portion of a long piece you stored the night before, you can pick up where you left off. After selecting either NEW MUSIC or CONTINUE, you will be asked:

DO YOU WANT TO HAVE TO TYPE AN 'A' TO  
ENTER EACH NOTE INTO MEMORY?

This option is provided to give the Musicomp novice a chance to review his note entries before they are added to the music memory. The 'A' option is entered only after the actual musical note has been entered, and adds all the information pertaining to the note - mode set, time value, etc. - to memory. While it does require one additional keystroke per note, it will also eliminate the need to delete erroneous entries. Most likely, you will want to use the 'A' option the first few times you make music with Musicomp, but will not need it after you've gained some familiarity with the system. Try it both ways and see which suits you best.

After you've selected whether or not to add each note to memory automatically, the screen display will become the working staff, with the list of special commands above it and the



staff, with the list of special commands above it and the "keyboard" below. These special commands are as follows:

A        Add note to memory, as explained above.

\*        Rest - puts in a rest at the currently set time value. If this rest is to be of a different duration from that of the last note entered, you will have to use a mode shift to set its time value.

?        Enables you to return to the PLAY/CREATE menu at any time. Returning to the PLAY/CREATE menu does not affect the music in memory. You will probably use the ? quite often to play the piece you're working on and to get to the edit option.

-        Removes the last entered note and sets the note counter back one. This is how you'll fix the mistakes you catch while you're entering music.

+        This allows you to change the mode - voice, time value, and timbre - of the music you're entering, and is explained more fully below with the music entry routines.

^        Review - This allows you to review back a specified number of notes from where you currently are in your music entry. Review has a couple of peculiar characteristics that you need to be aware of.

The mode must be defined before you go back for review. Suppose, for example, that you were at note #32 (the prompt was reading NOTE #32?) and you wanted to go back and review everything you entered so far. Suppose further that your piece opened with a series of eighth notes and that the last note you entered was a half note. If you went back 31 notes, you would hear the opening of your piece in half notes, not eighth notes, since the half note was the last mode defined. Therefore:

1. If you are going back to the beginning for review, remember that you started with note # 0 (which had to be a mode set) and that you therefore have one more note in memory than the screen prompt indicates.

2. If you are going back into the middle of things, be sure that you either pick up the review with a mode set or that you set the mode before you begin the review.

It will more than likely take a bit of experimenting before you're able to use the review option predictably and effectively.

At the bottom of the screen will be the prompt:

NOTE # 0? (MUST BE MODE SET)

MODE (0=H>S, 1=H>H, 2=S>S)?

Enter your choice and press RETURN. If on subsequent entries you wish to change only the time value of a note and not its voice, just press RETURN.

If you've selected the H>H voice, you will then be asked

TIMBRE (0-3)?

Enter your choice and press RETURN. The next prompt is:

NOTE LENGTH (1=WHOLE, 2=1/2, 3=1/4, 4=1/8, 5=1/16)

(.2=DOTTED 1/2, ETC.)?

Enter your choice and press RETURN.

At this point, the note counter will increment by one and ask

NOTE # 1?

The Apple keyboard can be used as a piano keyboard during note entry, using the "piano keyboard" template shown on your screen as a guide. The screen shows two rows of letters. The top row corresponds to the black keys on a piano; the lower row corresponds to the white keys. Press the key "Z" to make the lowest possible note. If you are in the note entry mode, you will see the note pop onto the screen in its proper location on the high-resolution music staff. The next higher note is obtained by pressing the letter "S". Following this convention, you will find middle-C at the letter "W". All notes are "sharped" rather than "flatted", so do not be suprised to see the note A-sharp when you thought you were selecting B-flat.

Enter the keyboard character corresponding to the note you want (from Figure 2-1, the Musicomp Chromatic Scale). The note will sound and be displayed on the staff. Do not forget to press A if you have chosen that option for adding notes to memory. The prompt will then read

NOTE # 2?

at which point you may enter the next musical tone, change the mode, or use any of the other special commands listed at the top of the screen (except A, which has no meaning until a note has been keyed in).

That's all there is to entering music - just the note entry and mode changes. You can also review as you wish or go back and edit, as explained below, if necessary.

## EDITING YOUR MUSIC

Probably the first thing you'll want to do after you've entered your last note is to go back and review the whole piece or, by entering a ? and then 2 from the PLAY/CREATE menu, play the piece. If you're human, chances are good that you will have made some kind of mistake and will need to edit your music.

If the example music is now entertaining your Apple's memory, then you're in good shape. Otherwise, you're more or less on your own here.

From the PLAY/CREATE menu, select 5, EDIT MUSIC, and then start the input list with Ø. Press RETURN or use RETURN and RPT until you have ten or a dozen lines on the screen. What you're seeing is the list of file entries you made in the process of keying in the example. You should notice two things at this point.

1. The individual keystroke entries that went into making a mode change are listed on one line (with TIMBRE=0 if H>H voice is not used). Thus, if you choose to EDIT a mode change line, you will be led through the same set of prompts as when entering the mode change line originally.

2. The notes themselves are shown with both their musical letter notations and the numerical value used by Musicomp. If you choose to EDIT a note, you must enter the new note's numerical value rather than its keyboard representation.

If your music needs editing, then edit; otherwise, hang on a minute until you've got your music stored on disk.

The other two capabilities you have to change your music file are:

1. DELETE, which simply erases the selected line number and pushes everything following up from the bottom (that is, all succeeding line numbers are decremented by one), and

2. INSERT, which requires a bit more explanation. If you need to insert a mode change or a note, it will go in ahead of the selected line number and push everything following down from there (that is, all succeeding line numbers are incremented by one). More specifically, assume for example that line number 13 of your music was the note G (#41), and that you had forgotten to put in a mode change before it. You would tell the program to insert at line number 13, and then enter the mode information as in the original entry. When you reviewed the file list again, you would see that line number 13 had become the new mode change and that the note G (#41) that had been line number 13 was now



line number 14.

You can also jump backward or forward for editing by using the GOTO option. This feature lets you review a passage that you just entered or edited to be sure the notes are right. It also allows you to jump forward to a new section of the music without having to scroll through all the intervening notes. At the bottom of your screen you will notice:

(>)=GOTO

This means that by pressing the key ">", then RETURN, you will be prompted for the number of the note to GOTO, for review or more editing.

And that's it for editing. To see the results of it, QUIT the edit function to get back to the PLAY/CREATE menu, then enter the edit function again and examine the lines you've just changed.

## SAVING YOUR MUSIC TO DISK AND GETTING IT BACK AGAIN

This is really simple.

From the PLAY/CREATE menu, select 6, SAVE MUSIC TO DISK. All you really have to do is make up a unique file name for the piece (30 characters maximum). After you've entered the file name, the disk drive will whirr and grind for a few seconds, and when it's quiet again, your music will have been safely tucked away.

Now you may, via the PLAY/CREATE menu, return to the main program. Along the way, you will be informed that the music memory will be erased. What's been saved on disk is okay - what will be erased is the Apple's active memory where the newly created music is being saved for the time being. If you haven't saved your music to disk and don't want to have to re-enter the whole works again, now is the time to enter NO.

Once you've returned to the main program, select ADD NEW MUSIC AGAIN. This time, when you get to the PLAY/CREATE menu, select 1 to load your music in from the disk using the file name you gave it, then select 2 to play it.

It wouldn't be a bad idea to get a short piece correct, save it to the disk where you'll have a permanent copy, then do a good deal of experimenting with the various EDIT options.

To learn how to delete (or erase) a piece from the disk, see the instructions on file deletion in Appendix B.

However, you are forewarned as follows:

DON'T save to a file with the same name as one of the music files supplied with Musicomp.

DON'T take a chance on saving several hours of work to a disk that may be nearly full.

DON'T ask to load a file that is not really on your disk.

Due to the limited ability of Integer BASIC to trap file I/O errors, any of the above actions will cause Musicomp to stop; a diagnostic message will appear; and you will have to re-boot to continue using your Apple II.

## FEEDBACK

The following bit of music is the first couple of lines of "Jesu" that comes with Musicomp. You might want to try keying this in to see if you can get it to match the programmer's version. Then you might want to change it to suit yourself.

### FIGURE 3-2

JESU, JOY OF MAN'S DESIRING  
From Cantata No. 147

J. S. Bach



"Just as my fingers on these keys  
Make music, so the self-same sounds  
On my spirit make a music, too."

Wallace Stevens,  
"Peter Quince at the Clavier"  
Stanza I (1923)



## APPENDIX A

### SETTING UP THE APPLE II SYSTEM

This appendix includes a list of the equipment you'll need to use the programs on your Apple II. You do not need to read all the manuals, but they should be on hand to answer questions that may arise in operating the equipment (e.g., how to boot a diskette).

Musicomp is written in Integer BASIC. To use it, you'll need the following equipment:

- o an Apple II with 32K or 48K bytes RAM; or
- o an Apple II Plus with 32K or 48K bytes RAM and an Integer BASIC Firmware Card; or
- o an Apple II Plus with the Apple Language System.

PLUS:

- o an Apple Disk II with Controller (16-Sector Proms);
- o a Video Monitor or Television.

For reference, you should have on hand a copy of the following manuals:

- o This Manual
- o Apple II BASIC Programming Manual (Setting up the Apple II);
- o DOS Manual (How to Boot the Diskettes).

## Putting The Pieces Together

Here are the steps to follow to put your system together:

- (1) To set up your Apple II, follow the instructions in the Apple II BASIC Programming Manual. You may not need to attach the Game Controllers, although there is no harm in doing so. Your Apple II must have at least the minimum amount of memory listed under the equipment description for you to use the programs.
- (2) If you already have a Disk Operating System, and are using a version of DOS that runs in 13 sectors (DOS 3.2.1 or earlier), you will need to change two proms on your disk controller card to update your system to 16 sectors. Any version of DOS earlier than release 3.3 will need to be updated. These proms are also the same proms that come with the Pascal Language System. Consult a DOS 3.3 manual for these procedures.

## APPENDIX B

### COPY PROTECTION AND FILE BACKUP

Special Delivery Software is copy protected, except in the case of program utilities or template-applications for major products (e.g. Apple PILOT).

In order to provide you with a backup capability, we enclose a second diskette. You should definitely store your backup in a safe location, and NOT use it. In the event your main diskette becomes damaged within the time period of Special Delivery Software's media warranty, you may return the main diskette to us for replacement, and continue to use your backup until we can send you a replacement.

Unlike most other copy protection schemes, our method is selective; protected and unprotected files may reside on the same disk.

On the Musicomp disk, all of the files have been protected, both program and music files. The music files are protected because they are referenced in a special menu in the Music Master program. Allowing the user to accidentally delete one of these files could cause problems later when the Music Master program tries to find a missing file. However, you can back up these music files by simply loading them from Musicomp, and then saving them to a different diskette.

You can also save your own music files to the Musicomp disk, or to a different diskette. If you save the files to the Musicomp disk, you can boot from DOS 3.3, and you will be able to catalog the Musicomp disk, and move your own files to another disk by using the program FID on your DOS 3.3 system master diskette. FID enables you to transfer unprotected files between Musicomp and other disks, in either direction, provided there is sufficient disk space on the destination disk, and it is not write-protected.

In short the unprotected files are normal DOS files with all the properties thereof. On the other hand, the protected files can only be accessed by booting from the Musicomp disk. Any attempt to copy, load, run or verify protected files from the normal DOS 3.3 will result in an I/O ERROR message. No damage is done; the fact is merely that normal DOS cannot access these files.

Memory protection is also in effect. If an unauthorized form of access is detected, the memory protection procedure will zero out all memory. This procedure is triggered by pressing the RESET



key, typing CTRL-C, a syntax or disk I/O error, or by any instruction entered once you are at the interpreter level (BASIC prompt & cursor), or at the monitor level (asterisk prompt).

Once triggered, your screen will be filled with R's (or Q's) on a white background. You will have to re-power your system to re-start any new application.











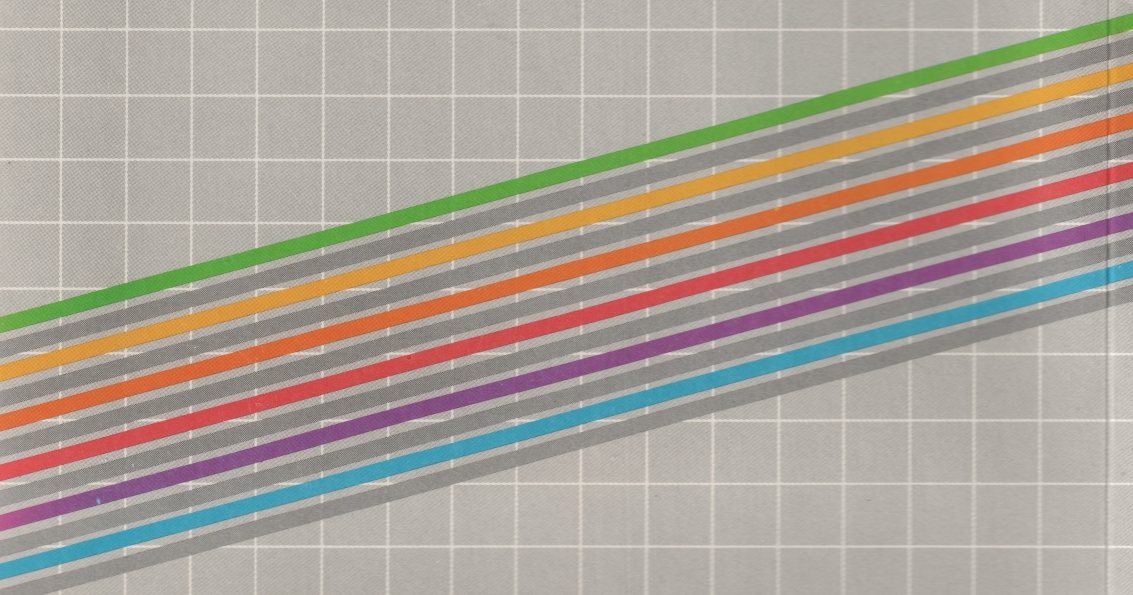


# MUSICOMP

C2H0002 MASTER

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